

### REMARKS

The Examiner rejected Claims 6 and 11 under 35 U.S.C. 103(a) as being unpatentable over Ibbetson, *et al* (hereafter "Ibbetson") (US 6,515,313 ) in view of Anayama, *et al* (hereafter "Anayama") (US 5,799,027). Applicant traverses this rejection. To sustain a rejection under 35 U.S.C. 103, the Examiner must show that the combined references teach each of the elements of the claim or that there is some motivation in the art for altering one of the teachings to arrive at the combined set of teachings. "The mere fact that a reference could be modified to produce the patented invention would not make the modification obvious unless it is suggested by the prior art." (*Libbey-Owens-Ford v. BOC Group*, 4 USPQ 2d 1097, 1103). "When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference" (*In re Rijckaert*, 28 USPQ2d, 1955, 1957). In addition, the Examiner must show that there is some motivation in the art that would cause someone of ordinary skill to combine the references, and that in making the combination, there was a reasonable expectation of success. Where the claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under section 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success... Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *In re Vaack*, 20 USPQ2d 1438, 1442(CAFC 1991).

In making this rejection the Examiner admits that Ibbetson does not teach a tilted active layer. The Examiner looks to Figure 7 of Anayama as providing the missing teaching. The Examiner maintains that one would be motivated to use the teachings of Anayama in the device of Ibbetson because it would remove the need for fabricating an exposed mesa.

First, Applicant must point out that Anayama teaches a system for making a laser diode in the GaAs material system. Anayama's method depends on having a stepped GaAs substrate to provide the slanted surface. Furthermore, this substrate is an n-type substrate. That is, Anayama teaches making a laser diode in the conventional method in which the n-

layers are grown first and then the p-layers. While Anayama does not provide the details of the stepped substrate in the cited reference, the cited reference refers to a prior application that is incorporated by reference (now US Patent 5,436,194) that provides the details of the stepped substrate growth. It should also be noted that the method of Anayama is critically dependent on being able to accurately control the doping of the layers above the active layer in the layer stack.

Ibbetson teaches an upside down GaN-based laser in which the p-layers are grown first. This is an essential feature of the embodiment identified by the Examiner. Ibbetson teaches that the substrate must be one on which GaN layers can be grown. Since GaAs and GaN have significantly different lattice constants, the substrate taught in Anayama would not be expected to function as a substrate in the device of Ibbetson. The Examiner has not pointed to any teaching that a similar stepped substrate can be provided in the GaN material system.

Further, as noted above, the device of Anayama requires a very controlled implantation process to provide areas of one layer with different ratios of implant atoms in each area. As pointed out in the specification of the present application, such control is difficult to obtain in upside-down configurations since the dopants used in p-layers tend to migrate into the layers deposited over the p-layers. These are the same dopants that must be carefully controlled in the device taught by Anayama. Accordingly, there is no reasonable expectation of success in using the teachings of Anayama in the device of Ibbetson. Hence, Applicant submits that the Examiner has not made a *prima facie* case for obviousness with respect to Claim 6 or 11.

I hereby certify that this paper is being sent by FAX to 703-872-9306.

Respectfully Submitted,



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